University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

RL:0794A

SB 261
MAKING AN APPROPRIATION
FOR A EUROPEAN BROWN SNAIL CONTROL PROGRAM

Response to Request of February 9, 1989
From Senate Committee Chairperson
Agriculture and Environment
Public Hearing - February 14, 1989

By
Michael Hadfield, Zoology
Jacquelin Miller, Environmental Center

In response to your request of February 9, 1989, we have compiled the following information pertinent to the intent of SB 261 that seeks to control the proliferation of the European Brown Snail.

Background

The European brown snail, Helix aspersa is a rapidly growing, highly reproductive snail that feeds on a wide variety of green plants, as well as on preparations of cereals. They hatch from eggs, grow to reproductive maturity in six months or less, and lay up to 200 eggs per adult per season. Since they are hermaphroditic, that is both sexes are present in a single animal, all snails lay eggs. For these reasons, if food is unlimited, population growth can be rapid, and destruction of leafy plants can be great. Helix aspersa has been found to be an agricultural pest in Europe and North America. However, there are natural controls that may regulate the populations of these snails. High soil moisture kills eggs (which are buried in soil), dense population growth creates crowding and leads to stunting of adults that lay far fewer eggs. The snails are also subject to parasitism by a variety of organisms that may lead to their sterilization or death.

A review of the past several years of the Proceedings of the Hawaiian Entomological Society, and The Nautilus (1956, vol. 69) has provided the following historical background regarding the local populations of Helix aspersa. This snail has been present in Hawaii at least since 1952, when it was recorded in Kaimuki. In 1956 the snail was found on Tantalus,

Oahu. By 1976 large numbers of the European brown snail were found near Waimea, on the Big Island, and in that year more than 4000 snails were caught. The area was treated with poison bait, and a public education campaign was carried out. No extensive damage was reported. In the 1982 proceedings, officials of the Hawaii State Department of Agriculture reported that in May 1978, control efforts for the European brown snail had been "reduced to a containment program". Subsequently, the program has been mainly a process of hand-picking snails after baiting. Only 158 snails were collected in the first half of 1978, and 920 snails between July and October of that year. It would appear that the numbers of snails present in 1978 were considerably lower than in 1976. We conclude that Helix aspersa is apparently a current agricultural pest in a restricted area on the Big Island. However, no documentation is presented on the extent of the infestation, the number of farms involved, the extent of damage to economically important plants, the density of snails, or the methods and extent of controls such as baiting and/or poisoning already under way. For example, what methods are being used by the affected farmers to control these pests?

We can understand the interest of the Department of Agriculture to initiate control programs for this snail. However, it is equally important that the control methods or programs not impact populations of non-target species and in particular species of endangered and threatened Hawaiian land snails. Contrary to our recommendations on many other pest control programs where we have urged that biological controls be initiated, we most strongly urge that in the case of the European brown snail, biological controls not be used. Predators introduced to control the giant african snail have decimated populations of native ground and tree snails in Hawaii, Moorea, Tahiti, and the Marianas Islands. A similar process is underway in American Samoa despite a U.S. ban on the deliberate introduction of snail predators to those islands in 1980.

As indicated in our previous testimony on SB 261, we recommend that additional information on the population ecology of the European brown snail be developed prior to the expenditure of funds for controling the spread of the snail. We suggest that such a study should be carried out by professional malacologists (specialists in the biology of molluscs, of which snails are members), rather than by entomologists (specialists trained in the study of insects). The study should seek to determine the distribution, abundance, rate of reproduction and other population characteristics of Helix aspersa in the infected areas. The study should conclude with a report on the severity and extent of the problem, as well as its current trends. It should include recommendations for measures that should be taken to control the European brown snail based both on conditions found on the Big Island as well as on published reports of methods found useful in other areas.

Catastrophic impacts to native species of land snails both on Hawaii

and other pacific islands have resulted from the use of biological controls. Therefore, we strongly urge that no biological control programs be initiated to control the proliferation of the European brown snail.

If a study is not initiated, we suggest that control measures be limited to:

1. Public education

2. Local application of toxic bait (and no distribution of toxins by air or in native ecogsystems)

3. Institution of a bounty system to promote snail collection and destruction (could be done through schools).

A final note for your information and consideration:

In France, California, New Zealand and probably other areas where Helix aspersa has been an agricultural problem, it has been turned to profit through development of "escargot farms." This gourmet food item is in great demand, and the snails can be profitably farmed on relatively small acreage. This would appear to be particularly appropriate in Hawaii, where the growing season is year-round.